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NAS WHITING FIELD
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FIELD PROGRAM QUALITY AUDIT FOR REMEDIAL INVESTIGATION PHASE IIA WITH TRANSMITTAL NAS WHITING FIELD FL
4/14/1993
ABB ENVIRONMENTAL SERVICES, INC

(21)

ABB
ASEA BROWN BOVERI

April 14, 1993

Commanding Officer
ATTN: Kim Queen, Code 1859
Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
Charleston SC 29411-0068

SUBJECT: **Field Program Quality Audit**
Remedial Investigation - Phase IIA
Naval Air Station Whiting Field
Milton, Florida
Contract N62467-89-D-0317

Dear Kim:

Enclosed please find a copy of the report summarizing the results of the 2 February 1993 quality audit of the Phase-IIA RI/FS field program. Per the requirements of the field audit, corrective actions for each of the audit findings along with the person(s) responsible for carrying out the corrective actions have been identified in this report.

If you have any questions, please call me at 904-656-1293 (ext. 314).

Very truly yours,

ABB ENVIRONMENTAL SERVICES INC.

Rao V.R. Angara
Task Order Manager

cc: **File: 7560-- (7.4.1)**
T. Campbell, ABB-ES
B. Greene, ABB-ES
C. Manos, ABB-ES
W. Murray, ABB-ES
E. Blomberg, ABB-ES

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QUALITY AUDIT REPORT
NAVAL AIR STATION WHITING FIELD
Audit Date: February 2, 1993

1. AREAS REVIEWED

1. Field Program Management
2. Monitoring Well Construction
3. Field Procedures
4. Sampling and Sample Handling
5. Field Records

2. SUMMARY AND CONCLUSIONS

OVERVIEW

The results of a quality audit of the ongoing field program at NAS Whiting Field indicate that activities are being carried out in a responsible and technically competent manner, and are generally consistent with the program's sampling and analysis plan and related documents. The project's task order manager, technical leader, and the field staff were all supportive of the audit process, providing ready assistance when needed and thoughtful, candid answers to the auditors' questions. Personnel assigned to this activity demonstrated sound technical knowledge and a good awareness of their roles and responsibilities as team members.

FIELD PROGRAM MANAGEMENT

The Field Operations Leader for NAS Whiting Field, Sal Consalvi, appears to be doing a very creditable job of managing activities at the site. The field office was found to be very clean and well organized, and field activities observed were being performed in an orderly and well structured manner. Field records are maintained so as to ensure their security and accessibility. Of special interest to the auditors, brief "tailgate talks" are being conducted with the field team on a daily basis. Addressing primarily health and safety issues, these meetings appear to be well received by the staff and are regarded as very worthwhile. One audit finding is related to field program management, and is found in Section 7, Finding #7.

MONITORING WELL CONSTRUCTION

Specifications for the installation of groundwater monitoring wells, found in the site specific QAPP, Appendix C of the NAS Whiting Field RI/FS Sampling and Analysis Plan, appear to have been modified somewhat in the Phase II-A Work Plan (Technical Memorandum No. 6). In a number of cases, the auditors found that strict adherence to these specifications was lacking. One of the audit findings refers to the lack of certification documents for well construction materials. The audit team was advised that these would be available from the drilling contractor's office, but when faxed copies were requested, they could not be produced.

The audit team expressed specific concerns to the field crew with regard to the condition in which prior work sites had been left by the drillers. One borehole, which had earlier been abandoned, had been left open and unmarked. At another location where a well had been installed but was not yet completed, the hole was left open with the unprotected casing extending several feet above the ground surface. Four audit findings related to monitoring well construction are found in Section 7, Findings #9, #10, #11, and #12.

FIELD PROCEDURES

Field procedures observed during the audit, although generally consistent with good technical practice, in some cases appeared reflect a lack of awareness by the staff of the requirements specified in project documentation. According to the task order manager, some of these observed inconsistencies reflect required work plan changes to conform to USEPA Region IV requirements, although no documentation for such changes was found. A number of procedures specified for the protection, calibration, and decontamination of equipment were not being followed. A change in the manner in which lithologic samples are collected and stored was viewed as a significant improvement by the on-site geologists; however, approval of the change does not appear to have been documented. Three audit findings related to field procedures are found in Section 7, Findings #3, #6, and #13.

SAMPLING AND SAMPLE HANDLING

No samples were being collected for chemical analysis at the time of this audit, hence direct observation of the related procedures was not possible. A review of the records of earlier sample collection activities indicated several deviations from the Sampling and Analysis Plan. The specification of preprepared sample labels and lists appears to assume the use of a proprietary computer label generation system which has been used in other ABB-ES field programs. This system was not available at Whiting Field, and labels were being filled out by hand, frequently after samples have been collected. One audit findings related to sampling and sample handling are found in Section 7, Finding #1.

FIELD RECORDS

Records housed in the field office files are indexed and appear to be well maintained. Field logs were found to be properly labeled and were generally very neat and well kept. A few earlier entry errors indicate procedural lapses which need to be watched. Many of the standard forms referenced in the QAPP are not in use, and the substitution of alternate forms of documentation is not documented. Omissions on chain of custody forms examined indicate the need for increased care and ongoing reinforcement by project leadership. Four audit findings related to field records are found in Section 7, Findings #2, #4, #5, and #8.

3. AUDIT RESULTS

The results of the audit are shown in three categories (1) Positive Observations, (2) Audit Observations, and (3) Audit Findings.

A number of activities were determined to deserve special recognition and are documented as Positive Observations. The Audit Observations denote concern in the judgement of the auditor and are offered as assistance to the project staff in improving its quality program. Audit Findings are deficiencies concerning QA requirements that are either missing, ineffective, or inadequately implemented. The audited management is required to address these audit findings with appropriate corrective action and to include a schedule for implementation.

The audit resulted in the identification of six positive observations, 12 audit observations, and 27 audit findings categorized in five functional elements as shown in Table 1.

Table 1.

Functional elements	Positive observations	Audit observations	Audit findings
Field Program Management	2	1	1
Monitoring Well Construction	0	3	4
Field Procedures	0	1	3
Sampling and Sample Handling	2	2	1
Field Records	2	4	4
Totals	6	11	13

4. LIST OF PERSONNEL INTERVIEWED

Rao Angara	Task Order Manager
Salvatore Consalvi	Field Operations Leader
Eric Blomberg	Project Technical Leader
Nate Hagelin	Geologist
Matt Alvarez	Associate Engineer
Gopi Kanchibhatla	Associate Engineer
Rich Nelson	Geologist

5. POSITIVE OBSERVATIONS

FIELD PROGRAM MANAGEMENT

1. The ABB-ES field office was found to be clean, spacious, and well organized. The trailer has been divided into well defined functional areas, and all supplies and materials housed within the trailer are stored in a very neat and orderly manner. The office is well equipped and presents a crisp, professional appearance.

2. The site Health and Safety Officer, Matt Alvarez, or his designee conducts a brief health and safety meeting at the start of each workday. Candid comments directed to the audit team indicate that these daily briefings are perceived as being of significant value and are very well received by the field crew.

SAMPLING AND SAMPLE HANDLING

1. The field team has developed a procedure whereby the analytical laboratory is notified by fax immediately upon shipment of samples from the field. When samples are received by the laboratory, the condition of the samples is reported back to the field office by fax. The use of a single form for both communications saves time, reduces paperwork, and provides standard documentation for all sample shipments.

2. The sample handling areas within the field trailer were notably clean and well organized. Clean sampling equipment was wrapped in foil and neatly stored away from any potential contamination sources.

FIELD RECORDS

1. Records maintained within the field trailer appeared to be kept in a careful and well organized manner. All site records were easily located and readily accessed.

2. At the end of each workday, the Field Operations Leader routinely photocopies the pages of the field activity logs and the site log containing the records of the day's activities. This practice provides backup for the primary sources of field information, which would not only reduce the impact of the loss or destruction of a logbooks, but also provides a copy that can be kept in ABB files when the original notebooks are turned over to the Navy. Further, it permits the FOL to review log entries daily while the books themselves are in use in the field.

6. AUDIT OBSERVATIONS

MONITORING WELL CONSTRUCTION

1. A borehole that had been abandoned following a decision to relocate a well had been left open and unmarked. At another location, a well which had been installed but was not yet completed was left with the hole open and the unprotected casing extending several feet above the ground surface. The risks these practices present to

personnel, the subsurface environment, and in the latter case, the newly installed well seem readily evident. It was suggested to the field crew that when such a structure could not be taken care of promptly, that a clean 55 gallon drum be inverted over it.

2. The Navy's well installation specification requires that borehole logging be performed "by geologist/hydrologist whose qualifications meet or exceed those for a 'Geologist-In-Training' (GIT) as described in Article 1, Chapter 23, Title 1, Code of Laws of South Carolina: Rules of the South Carolina State Board of Registration for Geologist". It is not known if this requirement conflicts with any requirements of the State of Florida. There were two drill rigs installing wells at Whiting Field, each with an assigned geologist. As no copy of the South Carolina requirements for a GIT was available, it could not be determined whether this specification was being met. Neither of the on-site geologists who were with the drill rigs have a State of South Carolina registration.

3. The Materials Safety Data Sheet for the Portland Cement being used in well construction cautions that the cement may cause "allergic dermatitis" from hexavalent chromium. It is not known whether the potential for hexavalent chromium contamination from this source has been assessed.

FIELD PROCEDURES

1. Several questions arose with regard to waste disposal practices employed at the site which were clearly inconsistent with those specified in the work plan. These issues could not be resolved on-site, because no copy of the Investigation Derived Waste (IDW) Management Plan was available in the field. The IDW Management Plan had not been designated as an applicable requirements document at the time the audit plan was being prepared.

SAMPLING AND SAMPLE HANDLING

1. NEESA, ABB, and EPA documents all specify that samples will be kept at 4 degrees Celsius prior to packing, sealing, and shipping. Further there is an implication that it is important that the samples remain at that temperature until they are stored in coolers at the analytical lab. There appears to be no provision for documenting that this criterion is met.

2. The QA Project Plan for this activity stipulates that ABB-ES will provide sample containers which have been prepared (cleaned) in accordance with one of three specific protocols based on the analyte of interest. Containers provided to us by CH2M Hill indicate precleaning as "Level 1, Wash A", and are apparently used for all analytes. Project leadership needs to investigate this matter with the laboratory and to try to reconcile our practices with the specifications of the QAPP. Furthermore, the laboratory supplies sample containers to which the appropriate preservatives have been added prior to shipping. This practice conflicts with the work plan documents.

FIELD RECORDS

1. Field notes are kept in glue- and thread-bound books as required, but the pages of these books are not prenumbered. Field personnel write the number on each page as it is used. Prenumbered pages are commonly specified to eliminate the possibility of someone removing a page during the course of a day's operations.

2. Although the field logbooks appeared to be generally well maintained, several instances of improper strikeouts were noted. In addition, it appears that on occasion a non-waterproof ink was used for logbook entries; several of these entries appear to have smeared or run. Other entries were written in pencil, which is not an acceptable practice.

3. Some field record forms required by EPA Region IV or the Project Sampling and Analysis Plan are not being used (e.g., field sample data record and Field Sample Data Sheet). The Task Order Manager explains that these deviations from the procedures as written in the planning documents, as well as other changes, have been discussed with the EIC, but that no formal written approval has been recorded.

4. A review of chain of custody (COC) forms found that the forms from 7/13-14/92 do not indicate shipper or airbill number. A form completed on 1/9/93 does not note the time custody was transferred to the shipper. The forms in use are those provided by the laboratory subcontractor, and differ significantly in format from the form specified in the Quality Assurance Project Plan. Only photocopies of COC forms were found on site.

7. AUDIT FINDINGS

[13 audit findings are attached]

FINDINGS

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 1 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Sample Labels	4	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	6.1 7.0 7.0	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

Sample labels will be prepared prior to initiation of work ... Sample labels will be secured with tape.

The COC procedure followed by the field crew involves using preprepared sample labels to document all information necessary for effective sample tracking.

A summary of [all] labels prepared, with space for sample tracking and notations is also printed ... which is retained as part of the project file.

DESCRIPTION OF THE FINDINGS:

In some instances, labels for sample bottles are generated at the time of sample collection. Labels on sample bottles have not routinely been secured with tape. No listing of preprinted labels is prepared or maintained.

PROPOSED CORRECTIVE ACTION:

Sample labels will be prepared prior to sampling events (groundwater sampling is the next event) and will be secured to the sample bottles with tape.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
August 1993 (groundwater sampling)	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
	Rao Angara

COMPLETION VERIFICATION	METHOD OF VERIFICATION
SAT UNSAT	*Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 2 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Equipment Calibration	5	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	Records Review	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	6.5 8.2	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

Equipment for real time monitoring must be calibrated according to the manufacturer's instructions prior to each day's use and at the end of each day's use.

Each price of equipment will be calibrated prior to each day's use. Data is recorded on a form similar to that shown in Figure 8-1.

DESCRIPTION OF THE FINDINGS:

Equipment calibration is not recorded on standardized forms. A review of the equipment logbooks for both of the OVA monitors in use on-site found no record of calibration of these instruments during the current shift.

PROPOSED CORRECTIVE ACTION:

Monitoring equipment will be calibrated prior to each day's use and be recorded in the equipment logbooks. A memo will be prepared indicating the entry of calibration into a logbook for the EIC's approval.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 3, 1993 (memo 2-10-93)	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

Monitoring equipment is being calibrated prior to each day's use and recorded in the equipment logbook. A memo indicating the use of a logbook was prepared on 2-10-93.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 3, 1993 (memo 2-10-93)	*Rao Angara*
COMPLETION VERFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg and memo dated 2-10-93.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 3 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Monitoring Equipment	3	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	Direct Observation	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	6.3.3	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

Monitoring equipment will be protected as much as possible from contamination by draping, masking or otherwise covering as much of the instrument as possible with plastic without hindering the operation of the unit ... Contaminated equipment will be taken from the [decontamination] drop area and the protective coverings removed and disposed of in the appropriate containers. Any direct or obvious contamination will be brushed or wiped with a disposable paper wipe. The units can then be taken inside in a clean plastic tub, wiped off with damp disposable wipes and dried. The units will be checked, standardized and recharged as necessary for the next day's operation [and] then be prepared with new protective coverings.

DESCRIPTION OF THE FINDINGS:

The only pieces of monitoring equipment observed in use at the site during the audit were OVAs and a PortaFID. None of these instruments appeared to be masked or draped in any way. No cleaning or checking of monitoring instruments was observed prior to the field team's departure at the end of the day.

PROPOSED CORRECTIVE ACTION:

Monitoring equipment will be protected as much as possible by draping or masking with plastic and will be cleaned and checked at the end of each day the equipment is used.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 3, 1993	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

Monitoring equipment is being protected as much as possible by draping or masking with plastic and is being cleaned and checked at the end of each day the equipment is being used.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 3, 1993	*Rao Angara*
COMPLETION VERFICATION SAT UNSAT	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 4 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Soil Sampling	5	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	Records Review	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	6.6.1	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

At the time samples are obtained, the following must be recorded by the sampler:

- **sample site location (e.g., grid coordinates baseline station and offset, or the location plotted on a map or aerial photograph);**
- **sample type and depth;**
- **date and time of sampling;**
- **project and sample designations;**
- **sampler identification; and**
- **analyses requested.**

DESCRIPTION OF THE FINDINGS:

Logbook entries for the soil sampling event of 8/13/92 do not identify the sampler, nor do they indicate the type of sample (method of collection) or the analyses requested.

PROPOSED CORRECTIVE ACTION:

Logbook entries for sampling events will include site location, sample type and depth, date, time, project number, sample number, sampler and analyses.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
August 1993 (groundwater sampling)	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
	Rao Angara
COMPLETION VERFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 5 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Soil Sampling	5	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	6.6.1	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

[At the time samples are obtained] the sampler must initiate chain-of-custody (COC) procedures and describe the sample site in adequate detail to allow the analytical results to be properly interpreted and, if necessary, to allow collection of additional samples from the same sample site. ABB uses preprinted labels, standardized record forms, and photographs...

DESCRIPTION OF THE FINDINGS:

On some occasions chain of custody forms have been initiated after samples were returned to the trailer. Standardized sampling record forms and preprinted labels have not been used.

PROPOSED CORRECTIVE ACTION:

Chain of Custody (COC) will be initiated at the time samples are collected. Standardized sampling record forms and preprinted labels will be used.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
August 1993	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
	Rao Angara

COMPLETION VERFICATION	METHOD OF VERIFICATION
SAT UNSAT	*Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 6 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Soil Sampling	3	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	N. Hagelin	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	6.6.2	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

The sample will be collected and documented, employing the procedures outlined below: ... [Step] 5. Place the remainder of the sample in a 16-ounce "soil jar".

DESCRIPTION OF THE FINDINGS:

Sixteen ounce soil jars are not being used. Instead several cubic centimeters of each sample are being retained in multi-compartmented plastic boxes, and the remaining sample is being discarded. It was noted that the smaller samples may not be sufficient for further physical testing, if required.

PROPOSED CORRECTIVE ACTION:

A memo will be prepared indicating the field change to multi-compartment plastic boxes and submitted to the EIC for approval.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 10, 1993	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

A memo indicating the use of multi-compartment plastic boxes was submitted to the EIC and approved.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 10, 1993	*Rao Angara*
COMPLETION VERFICATION SAT UNSAT	**METHOD OF VERIFICATION** *Memorandum dated 2-10-93.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 7 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Sampling Shipping	1	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	7.2	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

Prior to leaving for the field, the person responsible for sample collection must notify the LSC of the number, type and approximate collection and shipment dates for the samples. If the number, type or date of shipment changes ... the task leader must notify the LSC of the changes. This notification from the field also needs to occur when sample shipments will arrive on Saturdays.

DESCRIPTION OF THE FINDINGS:

The position of LSC (the Laboratory Sample Coordinator is a defined, program level position) does not appear to exist.

PROPOSED CORRECTIVE ACTION:

The Laboratory Sample Coordinator (LSC) wil be Sal Consalvi of ABB-ES.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
August 1993 (groundwater sampling)	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
	Rao Angara
COMPLETION VERIFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 8 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Data Tracking	5	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS QAPP	7.3.1	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

Prior to initiating a sampling episode, create a task specific Sample Tracking Form (Figure 7-4). Enter the E.C. Jordan sample location, type sample (media), and then place an "X" in the top half of each square of the column for which an analysis is proposed. While the sampling event is underway, complete the task-specific Sample Tracking Form based on the chain of custody records. Enter the date sampled, date shipped, analytical laboratory, airbill number, and then plan an "X" in the bottom half of each square in the column for which an analysis is actually requested.

DESCRIPTION OF THE FINDINGS:

This tracking procedure is not in use at NAS Whiting Field.

PROPOSED CORRECTIVE ACTION:

A Sample Tracking Form will be created and used.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
August 1993 (groundwater sampling)	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
	Rao Angara

COMPLETION VERFICATION	METHOD OF VERIFICATION
SAT UNSAT	*Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 9 PAGE 1 OF 2

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Well Installation	2	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
Applicable Well Installation Specifications	N/A	N/A	N/A	N/A

DESCRIPTION OF REQUIREMENTS:

Detailed specifications for the installation of wells were set forth in Appendix C of the NAS Whiting Field RI/FS Sampling and Analysis Plan (June 1990) in the document, ***Specifications for Groundwater Monitoring Well Installation, Southern Division Naval Facilities Engineering*** Command, Revision 3, November 3, 1988 This document was subsequently revised by the Navy in March 1989. Monitoring well design for this phase of the Whiting field project appears to have been modified somewhat in the Phase II-A Work Plan (Technical Memorandum No. 6, May 1992).

DESCRIPTION OF THE FINDINGS:

The use of construction materials as detailed in the most recent version of the Navy's monitoring well installation specifications, and modified in the Phase II-A Work Plan (Technical Memorandum No. 6) could not be verified. In some cases deviations from the specification were identified. Details are listed in Attachment A.

PROPOSED CORRECTIVE ACTION:

Deviations from the Navy's monitoring well installation guidelines will be documented and submitted to Whiting Field's EIC, Kim Queen.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
March 12, 1993	*Eric Blomberg*

CORRECTIVE ACTION TAKEN:

Deviations from the Navy's monitoring well installation guidelines were documented, submitted and approved by Whiting Field's EIC, Kim Queen.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
March 12, 1993	*Rao Angara*
COMPLETION VERIFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Memorandum dated March 12, 1993.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

Attachment A

The Navy's Guidelines for Groundwater Monitoring Well Installation incorporate a number of published standards from AASHTO, ASTM, and API as part of the well installation specification. The latest revision of each standard is to be used. During the audit it was determined that copies of the referenced standards publications were not maintained at either the ABB-ES field operations trailer at Whiting Field nor in the ABB-ES library in Tallahassee, indicating that it is unlikely that conformance to the standards is effectively monitored.

The Navy specification requires that a Certificate of Conformance be provided to the EIC for items that are used in a well installation. The certificate is to describe in detail how the material meets or exceeds the required specifications (standards). Listed materials include:

a) Casing
b) Screen
c) Grout
e) Gravel Pack
f) Caps and Plugs
g) Centralizers
h) Surface Casing
i) Well Protective Cover
j) Flush Mount Protective Cover
k) Padlock
l) Well Designation Sign
o) Epoxy Paint

Certificates of Conformance were not available for most of the materials in use at Whiting Field at the time of the audit.

For polytetrafluoroethylene (PTFE) flush threaded pipe, the specification requires the use of PTFE "O" Rings to seal all joints. The audit found that "O" rings of a nitrile rubber compound were being used in place of PTFE.

For well screens, the water velocity through the screen openings is not to exceed 0.1 feet/second. The opening size is to be determined from the analysis of the material in geologic formation to be screened and/or the size of the filter pack material. At Whiting field, no grain size data were available for either the geologic formation or the filter pack material. The screen slot size was indicated to be 0.01 in.

The specification calls for 2-in. inner diameter (I.D.) screens to have 3 rows of slots with a spacing of $^1/_8$-in. between slots. The screens in use did not meet the specification of slots per row and distance between slots.

The use of centralizers of the same material type selected for the casing/screen is specified; however, no centralizers were being used.

$^1/_4$-in. bentonite pellets of 90% montmorillonite clay is called for in the specification. The bentonite in use was in chip form.

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 10 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Well Installation	2	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
Well Installation Specifications	3.2	N/A	4	3/89

DESCRIPTION OF REQUIREMENTS:

Gravel pack, seals, and grout will be installed using tremie methods. Bentonite seals shall be allowed to hydrate the time period specified by the manufacturer. Accurate measurements shall be made to the top of the gravel pack and seals with a weighted steel tape and adjusted to reflect the top of the casing.

DESCRIPTION OF THE FINDINGS:

The gravel pack was installed through a tremie pipe. The bentonite seal was dropped from the top of the open borehole through the waste column. The bentonite chips appeared to be too large for the tremie pipe. The Field Operations Leader indicated that the bentonite seal was allowed to hydrate for 2 hours or longer. The hydration rate of bentonite chips from the manufacturer was not available. The Field Operations Leader indicated that a test on the hydration was conducted by placing some of the chips in a glass jar and that the bentonite hydrated in approximately 30 minutes. The depths to the tops of the sand pack fill and bentonite chips were being measured with a measuring tape and the tremie pipe, which was a known length. A weighted steel tape was not available.

PROPOSED CORRECTIVE ACTION:

Gravel pack seals and grout will be installed using tremie methods. The bentonite seal will be allowed to hydrate for 2 to 4 hours as specified by the manufacturer. The top of the gravel pack and seals will be measured with a weighted steel tape.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 3, 1993.	*Sal Consalvi*

CORRECTIVE ACTION TAKEN: *Gravel pack seals and grout are being installed using tremie methods. Bentonite chips are not being tremied because they are too large, as discussed in the approved memo to the EIC on deviations from SDIV guidelines. The bentonite seal is being allowed to hydrate for a minimum of 2 hours. The top of the gravel pack is being measured with a weighted steel tape.*

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 3, 1993.	*Rao Angara*
COMPLETION VERFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 11 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Decontamination	2	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	Direct Observation	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
Well Installation Specifications	3.5	N/A	4	3/89

DESCRIPTION OF REQUIREMENTS:

The drill rig will be placed on 10-mil polyethylene sheeting at each drilling site to contain any spillage or leaking of hydraulic fluid or fuel.

DESCRIPTION OF THE FINDINGS:

The drill rigs were not being placed on the 10-mil polyethylene. The Field Operations Leader stated that at the next well locations the drill rigs were to be placed on the 10-mil polyethylene.

PROPOSED CORRECTIVE ACTION:

The drill rig will be placed on 10-mil polyethylene sheeting at each drilling site.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 3, 1993.	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

The drill rig is being placed on 10-mil polyethylene sheeting at each drilling site.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 3, 1993.	*Rao Angara*
COMPLETION VERFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 12 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Security	2	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
Nas Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
NAS Whiting Field RI/FS Sampling & Analysis Plan, Appendix B	2.1.2	N/A	N/A	6/90

DESCRIPTION OF REQUIREMENTS:

Open casings of monitoring wells that are not completed should be secured by placing or fastening drill rig over the well.

DESCRIPTION OF THE FINDINGS:

As reported by the Field Operations Leader, this is not being done.

PROPOSED CORRECTIVE ACTION:

Open casing of monitoring wells that are not completed will be secured by placing or fasteni the drill rig over the well.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 3, 1993.	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

Open casings of monitoring wells that are not completed are being secured by fastening the drill rig over the well.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 3, 1993	*Rao Angara*
COMPLETION VERFICATION **SAT** **UNSAT**	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

QUALITY ASSURANCE PROGRAM AUDIT FINDING	AUDIT NO. 93-001 AUDIT DATE February 2, 1993	FINDING NO. 13 PAGE 1 OF 1

AUDIT LOCATION	AUDIT SUBJECT	AGENDA ITEM	CHECKLIST NO.
Milton, FL	Waste Disposal	3	

LOCATION OF FINDING	PERSON CONTACTED	AUDITOR
NAS Whiting Field	S. Consalvi	T. Campbell

CONTROLLING DOCUMENT	SECTION	PARAGRAPH	REVISION NO.	DATE
Investigation Derived Waste Management Plan	2.1.4	N/A	N/A	9/92

DESCRIPTION OF REQUIREMENTS:

If non-hazardous, PPE and DE will be double bagged and disposed of in a dumpster.

DESCRIPTION OF THE FINDINGS:

At boring/well locations where contamination of the soils was not evident, used personal protection equipment was being placed in a single plastic bag and deposited in a dumpster.

PROPOSED CORRECTIVE ACTION:

Non-hazardous PPE and DE will be double bagged and disposed of in a dumpster.

SCHEDULED COMPLETION DATE	RESPONSIBILITY FOR CORRECTIVE ACTION
February 3, 1993.	*Sal Consalvi*

CORRECTIVE ACTION TAKEN:

Non-hazardous PPE and DE is being double bagged and disposed of in a dumpster.

DATE COMPLETED	MANAGEMENT REPRESENTATIVE
February 3, 1993.	*Rao Angara*
COMPLETION VERFICATION SAT UNSAT	**METHOD OF VERIFICATION** *Field check by Technical Leader, Eric Blomberg.*

AUDITOR	DATE	REFERENCE:

REQUIRED ACTION: **Each AUDIT FINDING requires a response by the responsible unit or project manager within 15 days of notification. This response must address how the nonconforming item will be brought into conformance, and must give a schedule for compliance.**

ATTACHMENTS - CORRECTIVE ACTIONS

MEMO
TO: **RAO ANGARA**
FROM: **ERIC BLOMBERG**
DATE: **2-10-93**
SUBJECT: **PHASE II-A RI FIELD CHANGES AT NAS WHITING FIELD**

This memorandum presents two field changes to the NAS Whiting Field RI/FS QAPP. The field changes are as follows.

1. The daily calibration of monitoring equipment will be recorded in logbooks instead of on forms (as described in the QAPP).

2. After a soil sample has been collected and documented, a portion of the soil sample will be placed in multi-compartment plastic boxes and the remainder will be discarded. No physical testing was scoped for the Phase II-A RI, so there is no need for collecting and storing literally thousands of 16-ounce "soil jars".

MEMO

TO: RAO ANGARA
FROM: ERIC BLOMBERG
DATE: 3-12-93
SUBJECT: NAS WHITING FIELD PHASE II-A RI MODIFICATIONS TO SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND'S GUIDELINES FOR GROUNDWATER MONITORING WELL INSTALLATION

This memo presents modifications to Southern Division's March 27, 1989 guidelines for groundwater monitoring well installation that have been made during the Phase II-A RI at Whiting Field. Modifications that have been made, are referenced to the applicable guideline section number. These modifications have been dictated by the field conditions and will not affect the overall integrity of the monitoring well installation program. Sections of the guidelines that have not been mentioned are being followed as stated.

1.3.1 Monitoring well installation reports are submitted as GTGS boring logs in an Appendix to the Geologic Assessment Technical Memorandum that will be prepared at the end of the Phase II-A RI.

1.3.2 Certificates of Conformance for well construction materials are currently being obtained from the drilling subcontractor and other suppliers.

2.1.1 Two-inch diameter, Schedule 40 PVC riser with flush threaded joints is being used during Phase II-A.

2.1.2 Two-inch diameter, 0.01 inch slot, Schedule 40 PVC screen with flush threaded joints is being used during Phase II-A. The slot opening size was determined based on the size of the formation material.

2.1.4 The well caps consist of a 2-inch diameter PVC cap that is fitted with a rubber O-ring that provides a water tight seal when expanded. Flush threaded caps can not be used because the riser is cut to be three feet above ground surface leaving the top of the well without threads.

2.1.5 Centralizers have not been used during Phase II-A because there has not been a problem keeping the well plumb in the borehole during installation.

2.1.6 The filter pack is a 16/30 grade silica sand that has a specific gravity of 2.65.

Bentonite chips are being used in the water table wells and a bentonite slurry is being used in the deep mud rotary wells for the well seal.

Type I Portland Cement mixed with approximately 4 percent

of granular bentonite is being used for grouting the annular space to the surface.

2.1.7 Six-inch inside diameter, Schedule 40 PVC surface casing is being used during Phase II-A.

2.1.8 Locking (round) stainless steel protective covers will be used for surface completion of the monitoring wells during Phase II-A.

Round flush mounted steel protective well vaults with steel lids will be used in high traffic areas.

The well designation signs will be 3-inch by 4-inch stamped metal plates. They will be located on the north side of the concrete pads.

3.1 The drilling methods that will be used during Phase II-A will be hollow stem auger and mud rotary.

3.2 Monitoring well screens will be 15 feet on the water table wells and 10 to 15 feet on the intermediate and deep wells as presented in Technical Memorandum No. 6. All monitoring wells will be 2-inch diameter Schedule 40 PVC.

The boreholes will be logged by geologists with equivalent or more experience than that of a GIT in South Carolina. Soil samples will be collected according to ASTM D 1587.

Gravel packs and grout will be tremied into the annular space during monitoring well installation. Bentonite seals will be tremied if a slurry is used or will be dropped down the annular space if pellets or chips are used to prevent from clogging the tremie pipe due to premature hydration. Accurate measurements of the top of the gravel pack and seals will be made by a weighted fiberglass tape.

Water used for the drilling process will be sampled and analyzed for TCL/TAL full scan analysis. If the water source changes during the field program the new source will also be sampled and analyzed.

3.3 Well development will consist of pumping the well with a submersible pump or a centrifugal pump. Most wells will use a 2-inch submersible pump for development unless the groundwater is shallow enough to use a centrifugal pump.

3.4 All borehole cuttings and development water will be handled according to the Investigative Derived Waste Management Plan developed for Phase II-A at Whiting Field.

3.5 All down-hole drilling and sampling equipment will be decontaminated in accordance with USEPA Region IV SOPs.

3.6 A stainless steel protective casing with a locking stainless steel slip cap will be installed in the concrete pad.